STATE OF MONTANA
MONTANA DEPARTMENT OF TRANSPORTATION
JOB PROFILE AND EVALUATION

SECTION I - Identification

Working Title:
CADD Systems Analyst

Class Code Number: 151516

Class Code Title:
Computer Systems Analyst

Pay Band: 6

Position Number: 36091

☐ FLSA Exempt

Profile Completed By:
John Pirre
EIS Section Supervisor

Department:
Transportation

Division & Bureau:
Engineering Division

Section & Unit:
Engineering Information Systems Section
Program and Project Management Unit

Work Address:
2701 Prospect Ave.
Helena, MT 59601

Phone: 406-444-6001

☒ FLSA Non-Exempt

Work Phone:
406-444-6243

Work Unit Mission Statement or Functional Description:

The MDT's mission is to serve the public by providing a transportation system and services that emphasize quality, safety, cost effectiveness, economic vitality and sensitivity to the environment.

The Highways and Engineering Division prepares projects for bidding and coordinates highway construction. The Division is made up of the Materials, Construction, Right-of-Way, Bridge, Traffic and Safety, Environmental Services, Engineering Oversight, and Preconstruction bureaus; the CADD Systems and Engineering Management Support sections; and five District Construction Offices in Missoula, Butte, Great Falls, Glendive, and Billings for budget and workforce purposes.

The Engineering Information Services Section (EISS) is responsible for updating, customizing and maintaining the Computer Aided Design (CADD) and Program and Project Management System (PPMS) in a competent, functional and focused manner and for providing support, training and products for the end users of the systems. The Section is comprised of two units: Computer Aided Design Support (CADD) and Preconstruction project management system support (OPX2).

Describe the Job's Overall Purpose:

This position serves as a CADD Systems Analyst within the Engineering Information Systems Section. The position is responsible for ongoing development and maintenance of CADD related systems, (MicroStation, Geopak, DocuPlot, Document Management System), including centralized, District, and end-user services. Major duties include system development and administration; training, research, and technical assistance; and performing a variety of other project-management and operational duties as assigned. This position does not directly supervise others.

SECTION II - Major Duties or Responsibilities	***% of Time***

A. <u>**CADD SYSTEM DEVELOPMENT AND ADMINISTRATION**</u>   <u>**80%**</u>

1.   Researches and evaluates business processes, environments, and objectives of users to establish strategic plans for ongoing development and maintenance of the Department's primary CADD MicroStation system. This involves analysis and evaluation of agency business and engineering processes, system specifications, and applicable policies and procedures; consultation with users and management throughout the Department and districts; and research and review of technical documentation to determine viable solutions.

2.   Develops functional, system, and program specifications to plan CADD MicroStation, Document Management System (DMS), DocuPlot, and OPX enhancements. Coordinates with project teams and Information Systems Division (ISD) staff to identify project requirements (e.g., costs, staff time, resources, etc.), determines which issues are most critical to project feasibility, and recommends ways to prioritize and allocate limited resources. Coordinates with ISD to assess existing system resources and applications to determine what can be used, determine internal and external software and hardware coordination needs, and assess available external resources.

3.   Coordinates system development, enhancement, and maintenance efforts to ensure development projects are completed within established timeframes and budget limitations while ensuring continuity of support for engineering needs. This involves establishing and tracking critical milestones; managing change processes by ensuring users and support staff understand and are adequately trained to use/support new system functions and operations; and monitoring, analyzing, evaluating, and reporting work processes and progress. Ensures the effective flow of information by reporting project status to agency management and ensures effective use of EISS and other staff resources by coordinating and implementing work processes and procedures for long-term maintenance.

4.   Coordinates with ISD to develop and establish system development and maintenance policies and procedures consistent with user needs, agency requirements, and system specifications to ensure overall quality, consistency, and compliance within the CADD system. This involves assessing the effectiveness of existing policies and procedures, new technologies and developmental strategies, changing rules and statutory requirements, dynamic user and process needs, and other factors to ensure that policies and procedures represent the best interests of the Department, comply with all applicable regulations and requirements, and promote efficiency and cost-effectiveness.

5.   Designs CADD related systems, (MicroStation, Geopak, DocuPlot, and Document Management System) functions and operations by analyzing and evaluating preliminary project specifications and requirements, consultation and feedback from users and management, and available resources; formulating detail design specifications, data models, and business process models;

and verifying and validating specifications to ensure that user and design expectations and objectives are met.

6. Develops unique solutions for complex or unprecedented system conflicts, deficiencies, and other problems and serves as a technical authority on CADD related systems, (MicroStation, Geopak, DocuPlot, and Document Management System) development issues. Isolates problems; consults with information systems support specialists and other Division staff as necessary to evaluate the nature and scope of problems; develops, tests, and implements solutions.

7. Directs, plans, and coordinates the design of CADD MicroStation system functions and operations by analyzing and evaluating preliminary project specifications and requirements, consultation and feedback from users and management, and available resources; formulating detail design specifications, data models, and business process models; and verifying and validating specifications to ensure that user and design expectations and objectives are met.

8. Coordinates the development of unique solutions for complex or unprecedented system conflicts, deficiencies, and other problems and serves as a technical authority on CADD Microstation system development issues. Isolates problems; consults with information systems support specialists and other Division staff as necessary to evaluate the nature and scope of problems; and develops, tests, and implements solutions.

9. Prioritizes implementation sequences, monitors and resolves in-progress problems, and provides periodic time and cost updates to agency managers, end-user representatives, and project team members. This involves assessing and determining changes in project plans; anticipating and resolving potential project problems and impediments; designing efficient schedules to sequence project phases, deadlines, and milestones; and apprising users and information systems specialists of project progress, design features, and new options and alternatives related to system development.

10. Directs and coordinates unit testing and peer review of modifications to ensure the functionality of system components. This involves establishing system performance standards, testing sequences and procedures, and peer review teams; analyzing and evaluating test results; determining problems or conflicts; and developing and implementing modifications to resolve problems.

11. Coordinates with ISD to develop conversion plans to ensure the effective and efficient migration of data between existing and newly developed systems and components. Oversees evaluation of data integrity, parallel testing, compatibility, and related issues to determine the impacts of conversion on existing data and modify system implementation plans accordingly.

12. Develops and implements test plans to evaluate system performance. This involves developing test scripts, performance standards, and procedures; directing end-user tests; monitoring and evaluating results; and determining necessary modifications. System testing includes assessment of system performance within the existing user environment, including connectivity and integration with agency-wide systems, security and access, and system functions and procedures.

13. Directs and coordinates implementation plans to ensure the effective integration of live system components with the agency's business and information systems environment. Plans and determines sequences, timelines, and staff roles to ensure effective and efficient migration of data, monitor compliance with applicable rules and statutes, minimize user disruption, and assess and resolve technical or procedural problems.

B.   TRAINING, RESEARCH, AND TECHNICAL ASSISTANCE   15%

1.   Develops, delivers, and/or coordinates training programs on new system functions and operations to ensure the proficiency and competency of users. This involves developing training curricula based on system operations, assessment of user training needs in each engineering design group, new procedures and technologies, and other factors.   Researches and develops innovative training methods designed to maximize trainee access to and retention of information.

2.   Develops cost projections and recommends project budgets based upon planned system development activities, technologies, resource requirements (i.e., human, material, and financial), vendor services, and other factors. Monitors project expenditures to maximize resources and ensure appropriate and necessary expenditure of funds. Provides budget reports to the Section Supervisor and other managers to assess budget deficiencies, allocations, trends, and anomalies and resolve problems.

3.   Providing daily technical support for 300+ CADD users; including explanation of procedures new or updated CADD application procedures (Micro-Station, Geopak, DocuPlot, Document Management System); assistance to new and experienced uses with specific CADD systems problems; trouble-shooting specific end user problems; researching, resolving and documenting new problems, collaborating with other members of the CADD Support team, ISD staff and with vendor technical support for problem resolution. Customizing CADD applications (MicroStation, Geopak, DocuPlot, Document Management System) to meet the requirements established by MDT Engineering requirements, MDT CADD End Users, MDT Engineering management. Including, MDT ISD requirements, and CADD systems vendor criteria. Customized applications must meet testing requirements during development to ensure accuracy and compatibility with multiple systems. Accurate supporting documentation must be created and published to assist end user support.

4.   Identifies ongoing user needs and areas of deficiency by reviewing trouble logs; conducting training surveys; assessing new hardware, software, and application changes that require staff training; and directing or delivering specialized workshops and training sessions. Develops individual and functional area training plans and priorities. Researches and directs the development, implementation, and evaluation of specific course modules and manuals and plans, arranges, and directs the delivery of instruction.

5.   Actively monitors and continually evaluates new technologies, management strategies, trends, and other issues related to system and application development, administration, and troubleshooting approaches to maintain a high level of professional and technical expertise, anticipate future technological needs, and determine how new methods and technologies may enhance future system development and maintenance activities. Researches and integrates appropriate new information into management plans and coordinates with Section Supervisor, agency managers, and others to implement modifications.

6.   Provides Division-level application support and responds to technical problems referred by users regarding system or software problems.   This position is a primary technical authority for complex system problems that were not resolved at lower levels and is responsible for maintaining an in-depth knowledge of agency applications to provide information and coordinate the referral and resolution of system problems. Resolves user problems by establishing diagnostic tools and methods to isolate problems; analyzing hardware and software configurations, network components, and communication issues; and developing solutions to correct problems.

7. Coordinates with ISD for the configuration, installation, and related set-up procedures for new equipment and upgrades (e.g., hardware, printers, communication devices, peripherals, etc.) for engineering project management systems. This involves assessing relationships with existing applications and ensuring software/hardware will integrate with new and existing systems and applications. Tests and resolves installation problems and provides direction to users on operations.

8. Develops and coordinates the development of technical and training documentation to provide accurate and complete information and data related to system design, user training, technical programming, operational models and related diagrams, and other system specifications. Establishes policies, procedures, and documentation requirements for individual projects to ensure that system design, testing, implementation, and training activities are appropriately recorded throughout the course of development projects.

9. Coordinates the development and management of internal service level agreements to ensure critical division business processes are adequately supported. This involves analysis of business needs, statutory deadlines and requirements, business cycles (e.g., fiscal year end), data processing input requirements, and other factors to determine system availability requirements and to develop adequate system support, contingency, and backup plans in coordination with ISD and vendors.

C. **OTHER DUTIES**
Performs a variety of other duties as assigned by the Section Supervisor to support ongoing system development, administration, and maintenance goals and objectives. This includes directing special projects, attending ongoing training and education, and performing a variety of other duties as assigned.

Specific examples of problems solved, decisions made, or procedures followed when performing the most frequent duties of this position include:
Problems and decisions relate to planning and administering major information systems development and maintenance projects, including responsibility for system planning and conceptual modeling; ensuring compliance with State and Department rules and regulations pertaining to information systems development, use, and administration; and establishing policies and procedures for systems administration as well as user operations. The position also serves as a technical authority in the diagnosis and resolution of complex technical problems associated with CADD MicroStation and related systems. The position's evaluation and analysis of primary business processes; system capabilities and limitations; available project resources, finances, and timelines; applicable Department and State rules and regulations; and other factors have significant, long-term fiscal and operational impacts on the Department's ability to fulfill its major engineering functions.

Guidelines, manuals, or written procedures that support this position include:
Broad agency guidelines and annual EISS work plans provide the context for most work assignments, and the incumbent may consult with other internal and external information systems professionals, Department managers, and users to define business process and system needs and parameters. As a technical authority in CADD systems development, minimal assistance is available from supervisors and agency staff (the incumbent may reference technical specifications, communicate with vendor specialists, etc. to resolve unique or unprecedented technical problems). Work must comply with statutory time frames, systems administration policies, Administrative Rules of Montana (ARM), Montana Operations Manual, and other applicable State and Department rules and regulations. The incumbent coordinates with the Section Supervisor, ISD personnel, and agency managers to establish policies and

procedures, monitor budgets, and apprise of project status, but daily decisions and judgments are assumed to be technically defensible and professionally sound.

Which of the duties and/or specific tasks listed under 1. (above) are considered "essential functions" that must be performed by this position (with or without accommodations)? (If you need information or training on the identification of essential functions, please contact MDT Human Resources Division.)

The following duties are considered essential functions because they require specialized expertise and skill and are the primary reasons the job exists:

Duty A: Systems Development and Administration
Duty B: Training, Research, and Technical Assistance

The following mental and physical demands are associated with these essential functions:

PHYSICAL
- Light lifting (less than 10 lbs.)
- Carry light items (papers, books, small parts)
- Remaining seated for extended periods of time, with occasional walking; standing; bending
- Travel within the state to project locations, and out of state travel by airline to national conferences and meetings.
- Operating a personal computer
- Communicate in writing, in person, and over the phone

MENTAL
- Deal with the public on a regular basis
- Ability to multi-task
- Demands for accuracy in all aspects of work
- Ability to meet inflexible deadlines
- Computing arithmetic operations
- Comparing data
- Compiling information
- Analyzing
- Coordinating
- Synthesizing
- Negotiating
- Instructing

Does this position supervise others?   ☐ **Yes**   ☒ **No**

Attach an Organizational Chart.
ATTACHED

SECTION III - Minimum Qualifications - List minimum requirements for the first day of work.

Critical knowledge and skills required for this position:

KNOWLEDGE:

This position requires extensive knowledge of the concepts and theories of computer science and business administration; functional applications (e.g., UNIX, NT, etc.); information systems networking; data management products; data structures and interrelationships; and Department policies and business processes. The position requires an advanced knowledge of project planning and administration, customer service standards, and budgeting. A progressively responsible knowledge of engineering standards and processes is also required.

SKILLS:
The position requires skill in managing complex and varied system development and management projects; isolating and resolving advanced technical problems; communicating well with people of varied technical levels; managing multiple tasks and workflow; developing project plans; and establishing project goals, timelines, and standards.

Behaviors required to perform these duties?

Analytical/Interpretive Thinking: Effectively analyzes business and engineering processes, user and system needs and requirements, available resources, evolving technologies, and other factors to develop conceptual system models and project plans. Analyzes technical system functions and operations to resolve problems and develop enhancements.

Decision Making: Evaluates multiple and ambiguous factors to resolve problems. Determines the most appropriate technical models and project management practices to accomplish major objectives and meet agency needs.

Communication: Translates technical information to audiences of varied technical levels. Elicits information, critical reviews, and variable needs from users and information systems specialists. Presents and justifies best-alternatives for ongoing system design.

Independence of Action: Determines appropriate responses to business and engineering process needs, technical and operational system deficiencies, and enhancement opportunities with minimal assistance or precedent.

Team Work: Shares due credit with coworkers; displays enthusiasm and promotes friendly group working environments; works closely with other agency staff, consultants, and peers as necessary; supports group decisions and solicit input from coworkers; and displays team spirit.

Flexibility: Remains open-minded and changes opinions on the basis of new information; performs a wide variety of tasks and changes focus quickly as demands change; manages transitions effectively from task to task; adapts to varying customer needs.

CORE VALUES – BEHAVIORS 4/3/06

CUSTOMER ORIENTATION/SERVICE (P.11-12)
Creates an atmosphere in which timely and high quality information flows smoothly between self and customer. Encourages open, honest, constructive expression of ideas and opinions. Active listening skills. Uses appropriate body language. Seeks to understand others viewpoint. Analyzes the customer needs and adjusts to the perspective of the customer, when appropriate.

1   Interacts with the customer in an open and honest way; seeks understanding of others' viewpoints through active listening.

2   Assumes responsibility for an appropriate level of customer service; builds good relationships by encouraging others to express viewpoints; shows respect through active listening.

3   Contacts and consults with the customer routinely; shows follow-through; interacts openly and honestly with appropriate feedback; actively listens and evaluates in a non-judgmental manner.

4   Proactively seeks consultation with the customer about strategic issues, problems, and expectations; actively provides support, recognition, and appreciation; establishes, maintains, and uses network; willingly shares information as appropriate for the position.

5   Anticipates the needs of the customer and proactively communicates information; recognizes, and initiates opportunities to meet the customer's needs; is sought as an expert and resource in the area of customer satisfaction; consistently chooses the best method of communicating the **message to each customer or audience at an appropriate level of understanding and interest.**

DECISION MAKING (P. 22)
Independently takes action and responsibility for solving problems. Makes decisions designed to achieve desired outcomes. Challenges the status quo by taking calculated actions in complex, ambiguous, contentious, or hazardous situations to force an issue or set a direction.

2   Identifies opportunities; commits to and makes decisions; acts within appropriate time frames; assesses a problem and makes decisions using the appropriate set of facts.

3   Obtains all relevant information from internal and external sources before making a decision and understands the work processes impacted by the decision; assesses the risks and benefits to the organization and moves forward; considers alternatives prior to making a decision; makes sound and timely decisions in the face of uncertainty.

4   Makes effective, timely, fact-based decisions on complex issues; reflects on past experience, weighs the pros and cons of alternative courses of action before deciding on what approach to take; advocates new ideas and initiatives; recognizes potential or opportunity that is beneficial to the organization.

5   Makes tough decisions based upon a realistic and strategic assessment of opportunities and constraints, sets direction for the organization through strategic actions requiring risk-taking and solid decisions; makes decisions in which calculated risk is taken to achieve maximum results and benefit to the organization; aligns decisions with long-term organizational goals.

PERSONAL ACCOUNTABILITY AND OWNERSHIP (P. 31)
Takes pride in the job. Actively engages in professional self-development opportunities. Accepts individual responsibility for actions taken.

2   Learns from past experiences; remains positive about work; takes pride in job; strives for excellence.

3   Accepts responsibility and understands consequences for failures and mistakes, as well as, accomplishments and successes.

4   Openly solicits feedback about own behavior and puts suggestions into action; recognizes ways to improve productivity and customer service; understands how personal actions directly affect the success of the organization; engages in professional self-development opportunities.

5   Holds self accountable for and achieves objectives; goes beyond what is expected for the role or job in order to help the organization reach its goals; seeks to have a broad impact on the organization's overall success; expresses ideas for continuous improvement, as well as, producing work of excellent quality.

LEADERSHIP (P. 35)
Shares information, feedback, knowledge (two-way communication) with key persons inside and outside of the organization to ensure successful project outcomes and/or improvement. This includes training, teaching, and coaching others. Actively steps into a leadership role.

1   Gives basic directions and instructions and makes sure group has all necessary supplies and information.

2   Monitors the quality of the work of the group and ensures progress and timeliness.

3   Sets a good example by communicating, correcting, and training; demonstrates commitment to the continued long-term success of the team or group.

4   Supports and defends the group and its reputation in the larger organization; removes roadblocks, if possible, to ensure group achieves its goals; identifies conflict in the team and facilitates a resolution.

5   Uses strategies to promote team cooperation and productivity; establishes and communicates a compelling direction or vision that serves to motivate the group to work towards continual achievement of goals. Must have a global perspective of government as an "enterprise."

ETHICS (P. 44)
Models high standards of honesty, integrity, trust, and openness. Knows, understands, and follows through with the correct standards of conduct and moral judgment required; is willing to act outside the norm when needed to adhere to ethical principles. Communicates and demonstrates actions in a consistent manner. Respects others, regardless of individual capabilities, agendas, opinions or needs.

4   Displays integrity by holding oneself personally accountable; acts in accordance with standards for ethical judgment consistent with the organization's stated values; accepts responsibility; demonstrates respect for all team members regardless of individual capabilities, agendas, opinions, or needs; gains the confidence of employees and customer by respecting the confidentiality and privacy of their concerns and needs.

5   Consistently models high standards of honesty, integrity, trust, openness, and respect for the individual; encourages collaboration, trust, foresight, listening, and the ethical use of power and empowerment; fosters an organizational culture with high ethical standards by appropriate recruitment, training, and rewards so employees adhere to shared ethical standards.

FLEXIBILITY AND ADAPTABILITY (P. 49)
Accepts change as a healthy and normal part of growth. Receptive to new information and recognizes the validity of various viewpoints; sees situations objectively. Responds positively to changes in direction and priorities, responsibilities or assignments. Adjusts to multiple demands, priorities, ambiguity, and change positively. Works effectively within a variety of situations, individuals, or groups.

1   Reacts to change without disruption to others; routinely exhibits adaptability.

2   Switches roles or procedures easily to achieve work results; recognizes that change in the workplace is inevitable, responds positively to changes in direction, priorities, responsibilities, or assignments.

3   Understands and appreciates different and opposing perspectives; works effectively within a variety of situations, individuals, or groups; receptive to new information and recognizes the validity of various viewpoints.

4   Maintains effectiveness and focus when dealing with uncertainty, change, or transition; willing to experiment and take risks in trying different approaches; breaks out of usual patterns of behavior to achieve results.

5   Anticipates and drives organizational change under demanding situations and circumstances; redirects own work and the work of others during periods of shifting and multiple demands and priorities, ambiguity and change; anticipates and accepts changing roles, directions, and work methodologies.

TEAMWORK (P. 50)
Works cooperatively with others as part of a team as opposed to separately or competitively.

2   Participates in group discussions and respects the opinions of others; considers co-worker workload when volunteering or requesting assistance.

3   Supports team decisions and outcomes through actions and communications; shares roles with others on the team; gives credit and recognition to others; works collaboratively with other teams, work units, and peers.

4   Supports team by assisting all members to contribute to results; willingly takes turn with different jobs, cross train, or pick up the slack, as needed; understands that all members of a team are necessary in accomplishing the work and encourages without taking over or controlling; actively participates in team decisions and outcomes (even in the absence of consensus) through actions and communications.

5   Identifies and pursues solutions and looks for alternative ways to work with others that will create better results and working relationships; develops cooperation and collaborative work efforts toward mutually acceptable solutions; serves as a resource to other teams as requested; develops alternatives to improve team interactions; works to include the external customer as part of the team, when appropriate.

CREATIVITY AND PROBLEM-SOLVING (P. 59)
Generates ideas, fresh perspectives and original approaches; open-minded. Uses creativity and originality when problem-solving. Goes beyond traditional ways to address issues and problems.

1   Uses basic experience to solve problems; is open-minded; determines what sources of information are available to expend abilities to do the work and to improve work methods; asks questions.

2   Achieves results; resolves problems using ideas and available resources; seeks out ways to expend abilities to do the work and to improve work methods; knows when a problem is solved.

3   Resolves problems using a fresh, original, or nonstandard approach; generates ideas; willing to consider new ways of thinking and behaving.

4   Develops ideas that are unique contributions to work unit services and processes; identifies root causes of problems and thinks of alternative-solutions; challenges the status quo by experimenting with new ideas.

5   Develops novel or innovative concepts; leads others in a broad range of social, political, organizational, and economic issue; takes into consideration broad issues; considers the long-term, big picture when solving problems; resolves complex, strategic, sensitive, multi-faceted or long-range problems and issues; breaks traditions in reforming and reorganizing how services are accomplished. Recognized as a thought leader.

Education:

Check the <u>one box</u> indicating minimum education requirements for this position for a new employee the first day of work:

☐ No education required   ☐ Related AAS/2-years college/vocational training
☐ High school diploma or equivalent   ☒ Related Bachelor's Degree
☐ 1-year related college/voc. training   ☐ Related Master's degree

Please specify the acceptable and related fields of study:

Required/Acceptable: Computer Science, Mathematics, Engineering, Business, Project Management

Related: NONE SPECIFIED

Other education, training, certification, or licensing required (specify): The position requires specialized training or technical certification in the functions and operations of CADD systems.

Experience:

Check the <u>one box</u> indicating minimum work-related experience requirements for this position for a new employee the first day of work:

☐ No prior experience required   ☒ 4 years
☐ 1 to 3 years   ☐ 5 or more years

Other specific experience: Experience in an engineering-related environment is preferred.

Alternative Qualifications:
This agency will accept alternative methods of obtaining necessary qualifications.

☒ Yes   ☐ No

Alternative qualifications include: Directly-related experience in information systems development, project management, and/or technical systems training may substitute for education on a year-for-year basis.

SECTION IV – Other Important Job Information

NONE SPECIFIED

SECTION V – Signatures

Signature indicates this statement is accurate and complete.

Employee:

Name: _____Title:_____

Signature: _____Date: _____

Immediate Supervisor:

Name: _____Title:_____

Signature: _____Date: _____

Division/District Administrator:

Name: _____Title:_____

Signature: _____Date: _____

Department Designee:

Name: Jennifer Jensen   Title: Chief Human Resources Officer

Signature: _____Date: _____